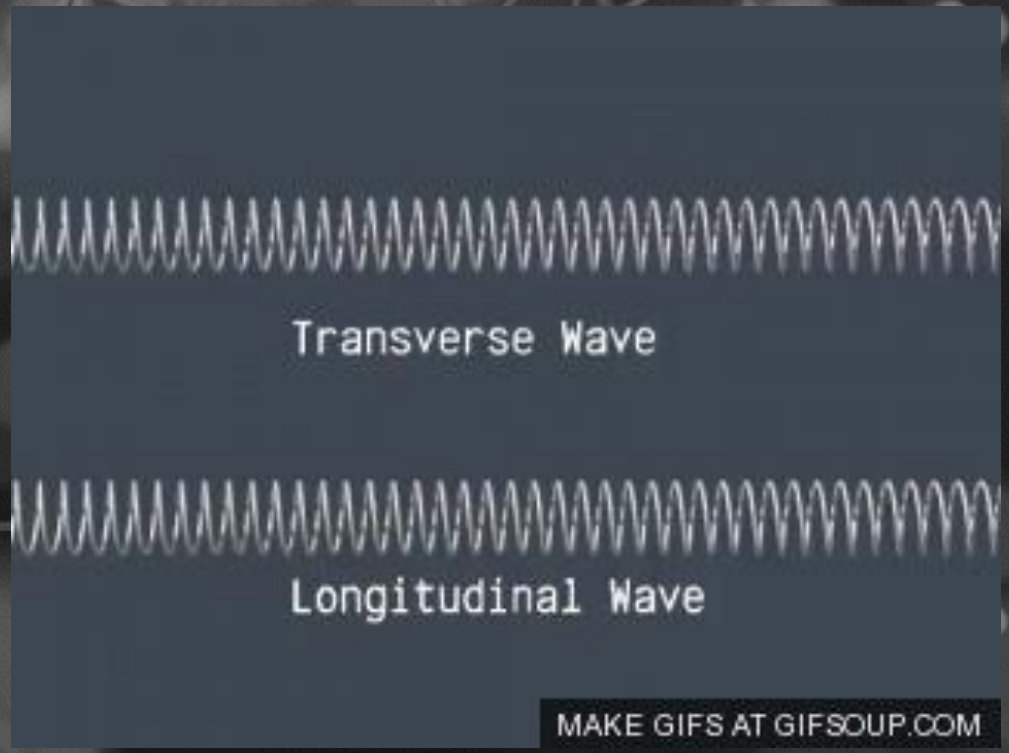
MICROTEACH LESSON PLANNING

UNDERSTANDING WAVES AND ITS TYPES



By Sunil Chugh

KNOWLEDGE CHECK

- What is a wave?
- What are the two main types of waves & their difference ?
- What is wavelength & amplitude of a wave?
- What is frequency of a wave?
- What is the difference between a wave and a particle?
- What are some examples of how waves are used in everyday life?

WAVES

1)A wave is a disturbance that travels through a medium or space and transporting energy from one location to another without transporting matter.

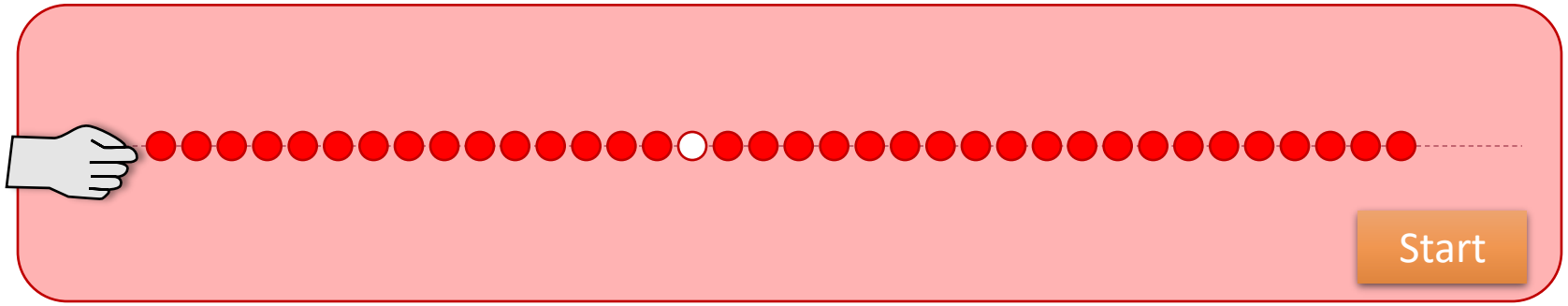
2) Waves can be transverse or longitudinal.

3) The main difference between a wave and a particle is that a wave is a disturbance that travels through and medium/space, while a particle is a localized object that has a definite position and momentum like atoms, molecules, protons, electrons etc.

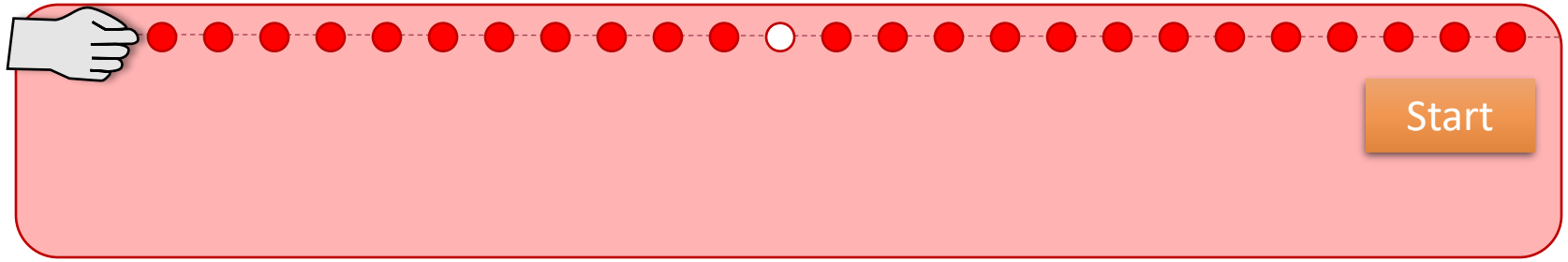
Transverse Wave

The oscillation (vibrations) of a transverse wave are **perpendicular** to the direction of energy transfer. E.g., gamma, X-rays, UV, Visible, IR, Microwaves, Radio waves.

Microwaves, Radio waves.



Longitudinal Waves

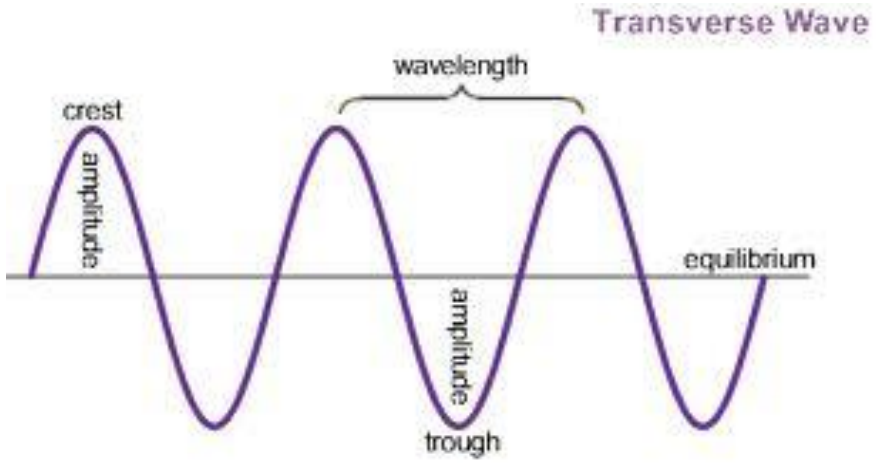


The oscillations (vibrations) of a **l**ongitudina**l** wave are para**ll**e**l** to the direction of energy transfer. E.g. sound, ultrasound, seismic P-waves.

4.5 Describe the difference between longitudinal and transverse waves by referring to sound, electromagnetic, seismic and water waves

Transverse waves

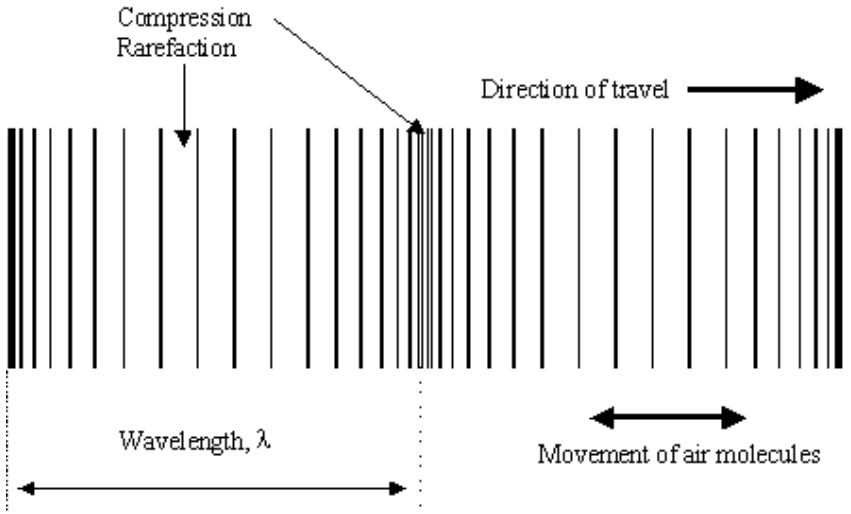
The oscillation (vibrations) of a transverse wave are **perpendicular** to the direction of energy transfer.



E.g. Water, seismic S-waves, gamma, X-rays, UV, Visible, IR, Microwaves, Radio waves.

longitudinal waves

The oscillations (vibrations) of a longitudinal wave are parallel to the direction of energy transfer.



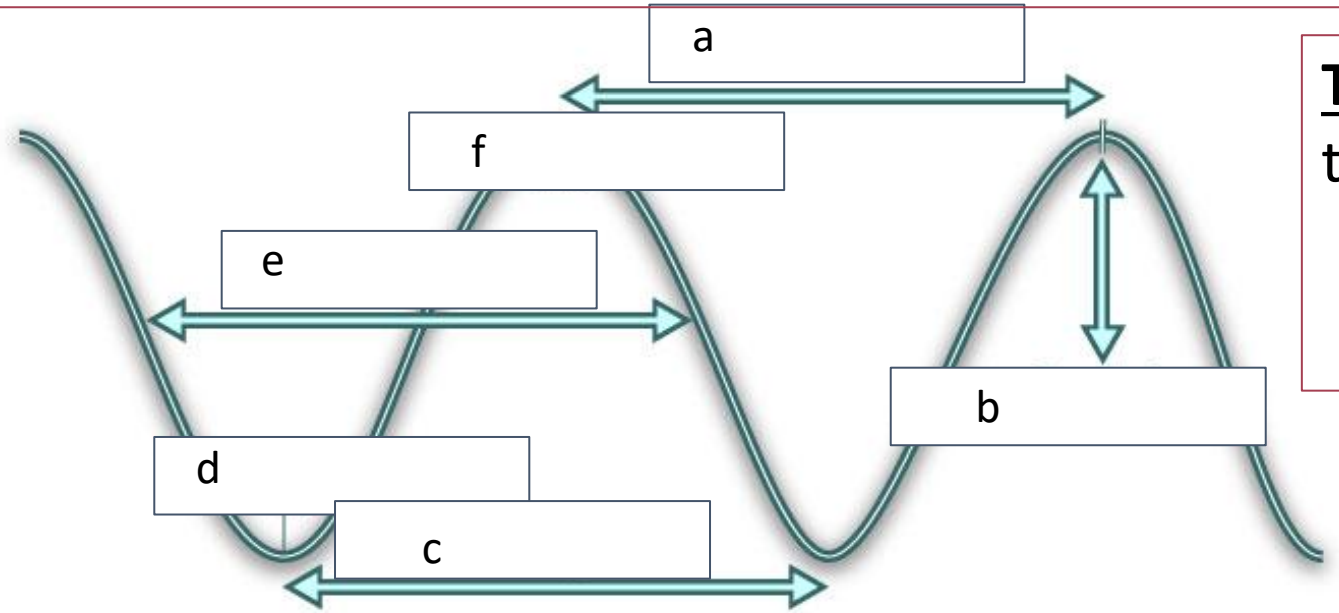
E.g. Sound, ultrasound, seismic P-waves.

Define and use the terms frequency and wavelength as applied to waves
Use the terms amplitude, period, wave velocity and wavefront as applied to waves

Wavelength λ: distance from one wave crest (peak) to the next

Amplitude: maximum displacement of a point on a wave away from its undisturbed position

Frequency f: number of waves passing a point each second



Time period T:
time for one wave

$$T = \frac{1}{f}$$

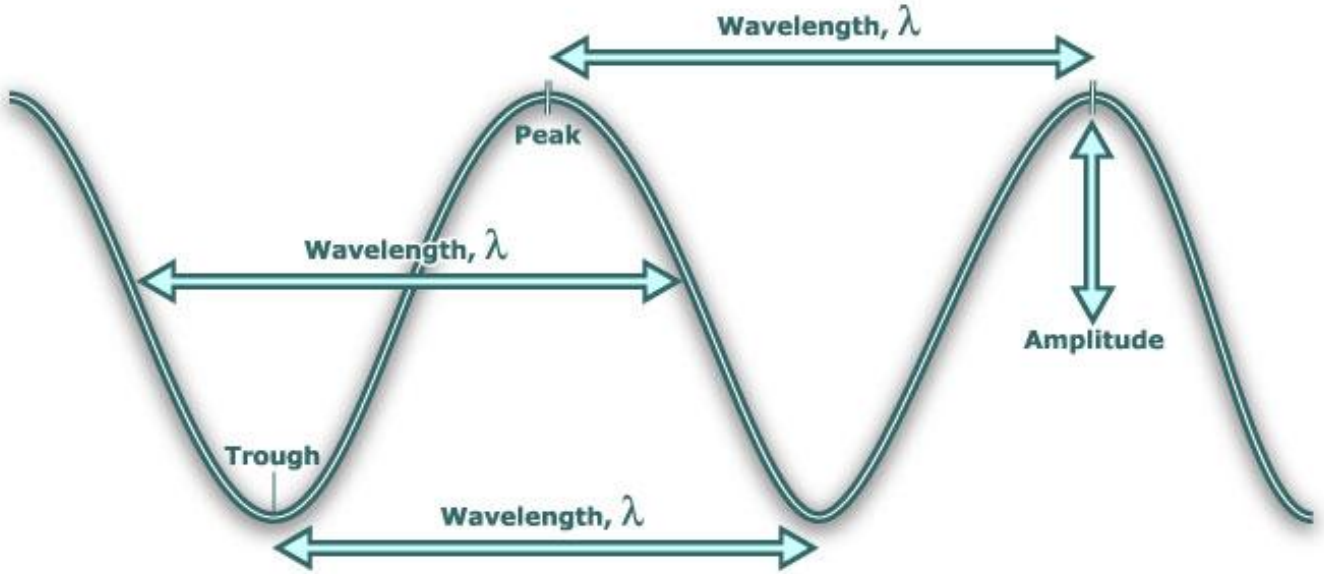
4.6 Recall and use both the equations below for all waves:

wave speed = distance (metre, m) ÷ time (second, s)

(metre/second, m/s)

$$v = \frac{x}{t}$$

Distance *x*



Wave speed m/s = frequency Hz x wavelength m

(Velocity) **v = f λ**

Very Freaky Wave

The wave speed is the speed at which the energy is transferred (or the wave moves) through the medium.

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